JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS

VOLUME 5, ISSUE 02
MOPNTHLY JOURNALS

ISSN NUMBER: 2751-4390
IMPACT FACTOR: 9,08

HIGH PRESSURE- RESISTANT POLYETHYLENE PIPES WORKING IN THE RELEASE ADD- ON ADDITIONS

Yulduz Xidirova

Professor at Karshi State Technical University

Hulkar Husanova

Master's student at Karshi State Technical University

Abstract: The types of additives used in the production of high-pressure polyethylene pipes, their functions and impact on the quality of the pipe are widely covered. The importance of antioxidants, ultraviolet stabilizers, carbon black and technological additives in improving the physical, mechanical, thermal and operational properties of polyethylene pipes is analyzed. The correct selection and use of additives in the production of HDPE, PE80 and PE100 polyethylene pipes is based on the fact that it allows the production of high-quality, long-lasting pipes.

Keywords: high-pressure pipes, polyethylene pipes, HDPE, PE80, PE100, additives, antioxidants, UV stabilizers, carbon black, pipe production technology.

Nowadays construction and engineering communications, polyethylene pipes are widely used. Especially in water supply, gas networks, sewage and industrial pipelines, the need for high-pressure resistant pipes is increasing. Compared to metal pipes, polyethylene pipes are lightweight, corrosion-resistant, elastic and have a long service life.

High-pressure polyethylene pipes are mainly made of high-density polyethylene (HDPE). In practice, the most common grades are PE80 and PE100. The quality characteristics of these pipes depend not only on the type of raw material, but also on special additives added during the production process.

High pressurized polyethylene The pipes are designed to operate at pressures of 6–25 bar and higher . They following in the fields wide applies to:

- drinking water supply systems;
- natural gas pipes;
- industry technological lines;
- irrigation and drainage systems.

The main advantages of polyethylene pipes are:

- to corrosion complete endurance;
- low hydraulic resistance due to the smoothness of the inner surface;
- high elasticity and impact resistance;
- assembly to do convenience;
- 50 years' service deadline.

Additions are polyethylene granules little in quantity add - on substances they are of the material technological and exploitative features to improve service does. High to pressure resistant pipes working in the release additions following tasks does:

- from oxidation of polyethylene protection ;
- mechanic strength increase ;
- ultraviolet to the rays endurance to provide ;
- working release process stabilization ;
- the appearance of the pipe .

Additives are usually added in amounts of 0.1–5%. Despite the small amount, their effect on the pipe is very significant.

Antioxidants polyethylene pipes plays an important role in the production . During the extrusion process, polyethylene molecules can break down under the influence of high temperatures. Antioxidants slow down this process and ensure the stability of the material.

Antioxidants are divided into two types:

- primary antioxidants — neutralize free radicals;
- secondary antioxidants — peroxides breaks down .

Polyethylene pipes open in the environment when used sun of the rays ultraviolet part to the material negative impact shows. As a result pipe becomes brittle and cracks appearance will be.

Ultraviolet stabilizers following to types divided into:

- UV absorbers — absorb harmful rays;
- HALS stabilizers protect polymer molecular chains.

These additives ensure long-term operation of the pipes in outdoor conditions.

Carbon black high to pressure resistant polyethylene pipes working in the release the most important from additions It is one of the pipes. In addition to providing black color, it also acts as a strong UV protector.

2–2.5% of carbon use:

- pipe service the deadline extends;
- mechanic strength increases;
- to crack endurance strengthens.

Conclusion. Processing additives facilitates the extrusion process, improves material flow and increases the smoothness of the pipe surface. Coloring additives are determined depending on the purpose of the pipes: blue line - for drinking water, yellow line — gas pipes for.

References list.

1. Maslova I. P. Khimicheskie dobavki k polymeram. - M: Khimiya, 1981. - 263 p.

2. Emmanuel N.M., Buchachenko A.L. Khimicheskaya fizika starenia i stabilizatsii polimerov. M.: Nauka. 1982. -356 p.

3 . Shlyapnikov Yu.A., Kiryushkin S.G., Marin A.P. Antioxidative stabilization of polymers. M.: Nauka. 1986. -232 p.

4. Kestelman V.N. Fizicheskie metody modifikatsii polimernykh materialov. M.: Nauka, 1984, 224 p.

5 . Kozlov P.V., Papkov S.P. Physico-chemical plasticizer 6olimerov. M.; Chemistry, 1982, 283 p.

9. Pod ed. B.I. Sajina Elektricheskie svoystva polimerov. L .: Chemistry , 1970, 376 p .

7 . Ehrenstein GW *Polymeric Materials.* Hanser Publishers, 2012.