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Agricultural irrigation equipment — Filters for micro-irrigation —

Part 1: Terms, definitions and classification

Matériel agricole d'irrigation — Filtres pour micro-irrigation —

Partie 1: Termes, définitions et classification

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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 9912 consists of the following parts, under the general title *Agricultural irrigation equipment — Filters for micro-irrigation*:

— *Part 1:Terms, definitions and classification*

— *Part 2: Strainer-type filters*

— *Part 3: Automatic self-cleaning strainer-type filters*

Introduction

Clogging of irrigation system components and, in particular, of drip emitters, is one of the main problems encountered in micro-irrigation. Materials causing clogging include debris, suspended particles of organic and inorganic origin (sand, silt, clay, plastics, algae and water-borne insects), chemical deposits (calcium carbonate and magnesium carbonate, calcium sulphate, metal oxides and metal hydroxides) and biological suspensions (slime secretions and fibres). Severe clogging problems are often the result of a combination of a number of these.

The effect of the clogging materials differs according to the water source (see Annex A for a list of irrigation water sources). With surface water supplies, water quality may also vary from one season to another and with chemical injection. In addition, clogging hazards depend on the operating conditions, pumping regime, irrigation system and chemical injection program.

The function of the filter in an irrigation system is to remove materials from the water that can clog or otherwise foul the various components of the system. However, under typical irrigation conditions, and in view of the wide range of size and hardness of suspended particles in irrigation water, complete removal of all suspended particles cannot be expected.

Moreover, under conditions of alkaline or hard water when accompanied by conditions of high biological activity and/or high suspended organic particle content, the materials passing through the filter are liable to coalesce in the piping system and/or in the emitters and to cause clogging. Hence, depending on the water quality, it could be necessary to use two or more filters in series in different parts of the system to minimize clogging.

Under conditions of problematic water and high filtration efficiency, clogging of the filters themselves may prove to be the main problem and completion of an irrigation set may be impeded due to the need for their frequent cleaning.

Various operating methods, using either absorption or separation, are employed in order to separate and/or remove clogging materials from irrigation water. In turn, separation can be by means of surface separation (gravity surface separation, pressurized surface separation or self-circulating separation), centrifugal separation, entrapment or interception.

Agricultural irrigation equipment — Filters for micro-irrigation —

Part 1: Terms, definitions and classification

1 Scope

This part of ISO 9912 defines terms used in relation to filters intended for agricultural micro-irrigation systems — in particular, pressurized systems — and provides a means of classifying those filters according to filtration method, structure, operating principle and function. It does not deal with classification according to the type of water intended to be filtered; nor does it apply to the classification of filters for potable or domestic water use.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
filtration
process employing a permeable medium and/or spinning component to separate, from water, materials that would clog an irrigation system, also employing a means for removing those materials from the permeable medium or spinning component such that the capacity of the medium or component to separate the materials is renewed

2.2
pre-filtration
process for separating primarily large particles from water to be filtered with the object of reducing the clogging of the filter elements and, consequently, the head loss across the filter elements

2.3
interception
method of removing suspended particles from water, by gravity, employing gravel partitions between reservoir basins to separate the suspended particles from the water

2.4
surface separation
method of unpressurized separation that depends on gravity and employs an inclined separating element, such as a screen, mesh or strainer, to separate suspended particles and larger clogging material from the water

2.5
centrifugal separation
method of separation that separates, from water, clogging material heavier than water and that employs a spinning technique using centrifugal forces exerted by the filtered water, as in a hydrocyclone