



Dry Chemical Powder recycling practices

Object

Practices related to the reuse and recycling of ABC firefighting powders in the fire extinguisher market.

Context

In recent years, a growing activity has emerged involving the recovery and recycling of ABC firefighting powders from:

1. End-of-life fire extinguishers (through dismantling).
2. Fire extinguishers **in maintenance with powder replacement. The replacement of the extinguishing agent varies according to the maintenance standard of the individual country.**

In both cases ABC powders with different compositions (for example with different MAP content) and different sources are collected and stored together.

Then this recovered powder can follow different process before they are reintroduced to the market (resold to manufacturers, maintenance companies, or on the open market): in some cases, the powder is collected and reprocessed but, in other cases powders are just mixed together and resold.

This situation creates uncertainty for primary powder producers, with possible repercussions on the overall quality of the product on the market and on safety for the end user.

Main Issues Identified

The analysis of current recycling practices highlights several critical issues about the quality of the powder and the efficiency of the portable extinguisher containing it:

- **Guarantee of the constant quality of the recycling powder**

An ABC powder should comply with minimum chemical and physical properties, described in EN 615:2009 standard, such as: bulk density, particle sizes, chemical composition, moisture content. The choice of raw materials and the manufacturing process guarantees the consistency of these properties and thus the quality of the powder

The recycling powder is a mix of ABC powder with different MAP compositions, different colors, different particle sizes, different humidity and different ages. Some constituents of the powder, sensible to storage conditions, may have lost their properties as they age. To ensure the constant quality of the recycling powder the chemical and physical properties should be analyzed, readjusted and comply with the EN 615 requirements.

- **Guarantee of efficiency on fire**

An ABC powder, complying with EN 615 requirements, is also tested with the portable extinguisher for which it is intended in order to check the compatibility of the powder with the equipment. The recycling powder should also comply with the EN 3-7+A1:2008 standard. The constancy of the powder is a key parameter of success.



- **Traceability**

Each powder has its specific name that corresponds to dedicated composition and physico-chemical specifications. Recycled powders need to follow the same rule

- **Documentation** such as certificates of analysis, compliance of the recycling powder to EN 615 must be available for every batch supply. Compliance to EN 3-7+A1 must be provided.

- **Waste legislation**

Recycling powder should comply with waste legislation, which governs powder recovery and management, and it is different from country to country in Europe

Conclusion

Powder recycling is an environmentally friendly operation that can be carried out while ensuring the effectiveness of the fire extinguisher and the safety of users.

The collection and recycling process must be controlled, and the recycled powder be analyzed and adjusted to ensure consistent physical and chemical properties.

If all the issues mentioned in this document are properly managed and controlled, the result can be a safe, reliable, and clearly traceable product.

Looking ahead: we anticipate that the discussion on the reuse and recycling of ABC firefighting powders will be extended to all relevant stakeholders, including manufacturers, maintenance companies, as well as standardization and certification bodies and regulators, in order to develop common guidelines, enlarge the EN 615 to recycling product, create dedicated certification and regulation... that ensure market transparency and preserve user safety.



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