

## Product Information

# ReadyShield® Protease Inhibitor Cocktail

Safe for Proteomic Mass Spectrometry applications

**PIC0007**

## Product Description

Crude protein extracts contain endogenous proteases, which can degrade the proteins in the extracts. The best way to increase the yield of intact unmodified proteins is to add inhibitors for the proteases known to be present in the extract.

This ReadyShield® Protease Inhibitor Cocktail is designed to be suitable for mass spectrometry proteomic analysis. The protease inhibitors in the cocktail have broad specificity for the inhibition of serine, cysteine, aspartic, and metalloproteases. The inhibitors selected do not interfere with LC-MS analyses. Inhibitors capable of covalent, irreversible protein modification (such as AEBSF or E-64) were avoided, since these inhibitors were demonstrated to modify non-target proteins, and thus introduce artifacts in mass spectral interpretation.<sup>1</sup> Bestatin was also avoided, since it can mask identification of some protein derived peptides.

PIC0007 is EDTA-free. All inhibitors were selected to be compatible with downstream sample processing, such as immobilized metal affinity chromatography (IMAC) for His-tagged protein purification.

Specific inhibitory properties of the components are:

- Leupeptin hemisulfate salt: both serine and cysteine proteases, such as plasmin, trypsin, papain, and cathepsin B<sup>2,3</sup>
- Phosphoramidon disodium salt: thermolysin and collagenase<sup>2</sup>
- Pepstatin A: acid proteases, such as pepsin, renin and cathepsin D, and many microbial aspartic proteases<sup>3</sup>
- Elastatinal: serine proteases, such as papain, elastase and trypsin<sup>2,3</sup>

- Aprotinin: serine proteases, such as chymotrypsin, trypsin, and elastase<sup>4,5</sup>
- Nafamostat mesylate: serine proteases, kallikrein<sup>6</sup>
- Antipain: serine and cysteine proteases, and some trypsin-like serine proteases<sup>2</sup>

## Product

This cocktail is supplied as a ready-to-use solution using a proprietary non-freezing formulation. It will not freeze in -20 °C storage or when stored on ice.

## Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

## Storage/Stability

Storage of this product at -20 °C is recommended. The cocktail is shipped under cooler storage conditions ('wet ice').

As supplied, this product is stable for two years if stored as recommended. Additional stability data show that as supplied, the product is stable for one month if stored at 2-8 °C, and for one week if stored at 25 °C (room temperature).

## Procedure

The recommended dilution for use in mass spectrometry proteomics workflow is 1:1000.

**Note:** Not all lysates and extracts contain the same levels of endogenous proteases. It may be necessary to adjust the volume of cocktail used.

## References

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2. Umezawa, H., *Annu. Rev. Microbiol.*, **36**, 75-99 (1982).
3. Mumford, R.A. *et al.*, *Biochem. Biophys. Res. Comm.*, **103(2)**, 565-572 (1981).
4. Fritz, H., and Wunderer, G., *Arzneimittelforschung (Drug Research)*, **33(4)**, 479-494 (1983).
5. Hewlett, G., *Bio/Technology*, **8**, 565-568 (1990).
6. Fujii, S., and Hitomi, Y., *Biochim. Biophys. Acta*, **661(2)**, 342-345 (1981).

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