

## Datasheet: TZC002CYS

<b>Description:</b>	BiSpyCatcher2-CYS
<b>Name:</b>	BISPYCATCHER2
<b>Format:</b>	Catcher-CYS
<b>Product Type:</b>	Recombinant Protein
<b>Quantity:</b>	1 mg

## Product Details

### Applications

This product has been reported to work in the following applications. This information is derived from testing within our laboratories, peer-reviewed publications or personal communications from the originators. Please refer to references indicated for further information. For general protocol recommendations, please visit [www.bio-rad-antibodies.com/protocols](http://www.bio-rad-antibodies.com/protocols).

	Yes	No	Not Determined	Suggested Dilution
Immunoassay	■			

Where this product has not been tested for use in a particular technique this does not necessarily exclude its use in such procedures. Suggested working dilutions are given as a guide only. It is recommended that the user titrates the product for use in their own system using appropriate negative/positive controls.

<b>Target Species</b>	Protein/peptide tag
<b>Product Form</b>	BiSpyCatcher2 purified recombinant protein, with one engineered cysteine residue; use for site-specific conjugation to a label of choice - liquid
<b>Preparation</b>	Recombinant protein expressed in <i>E. coli</i> and purified by affinity chromatography
<b>Source</b>	<i>E. coli</i>
<b>Buffer Solution</b>	Phosphate buffered saline
<b>Preservative</b>	0.0095% MIT
<b>Stabilisers</b>	5 mM EDTA
<b>Approx. Protein Concentrations</b>	239 µM (7 mg/ml)

**Product Information** **BiSpyCatcher2** (H-BiSpyC2) is a 29 kDa homodimer of SpyCatcher2 ([TZC001](#)) bridged with a flexible linker. Each SpyCatcher2 subunit can form a stable covalent isopeptide bond with a second protein that includes a SpyTag. The reaction occurs spontaneously on mixing, is rapid, irreversible, high-yielding and shows good specificity. BiSpyCatcher2

contains a His6-tag at the N-terminus. To avoid deamidation of asparagine, a N105D mutation was introduced ([Hentrich et al. 2020](#)) for each of the two Catchers.

The reaction is robust at pH 5 to 8, at temperatures from +4°C to +37°C, in various buffer conditions (Ca<sup>2+</sup>/Mg<sup>2+</sup> not needed) and in the presence of detergents. The reaction also occurs inside cells (*in vivo*). Since the speed of the coupling reaction is concentration dependent, it is recommended to use BiSpyCatcher2 undiluted.

All the different formats of BiSpyCatcher2 are compatible with Bio-Rad's recombinant HuCAL® antibodies with a SpyTag2 at the C-terminus of the heavy chain.

[Download BiSpyCatcher coupling protocol](#)

BiSpyCatcher2 ([TZC002](#)) is available in two modified versions, BiSpyCatcher2-CYS ([TZC002CYS](#)) and BiSpyCatcher-CYS3 ([TZC002CYS3](#)), which contain one or three cysteine residues, respectively, for site-specific conjugation by the user. BiSpyCatcher2 ([TZC002](#)) is also available conjugated to biotin ([TZC002B](#)) and HRP ([TZC002P](#)).

BiSpyCatcher2-CYS can dimerize by formation of a disulfide bond via the free cysteines. Before conjugation to these cysteines, the BiSpyCatcher2-CYS must be reduced e.g., by addition of 5mM DTT and incubation for 1 hr at room temperature, followed by a fast DTT removal step, e.g., by size exclusion chromatography, as DTT can interfere with the conjugation chemistry.

BiSpyCatcher2-CYS3 contains DTT to avoid oligomerization through disulfide bond formation. Immediately before conjugation, to avoid oxidation and disulfide bond formation, carry out a fast DTT removal step, e.g., by size exclusion chromatography.

[View all available Catchers](#)

<b>Protein Molecular Weight</b>	Predicted 29235 Da
<b>Purity</b>	≥90% determined by SDS-PAGE under reducing conditions and visualized by coomassie blue staining
<b>Instructions For Use</b>	<a href="#">View BiSpyCatcher Coupling Protocol</a>
<b>References</b>	<ol style="list-style-type: none"><li>1. Keeble, A.H. <i>et al.</i> (2017) Evolving Accelerated Amidation by SpyTag/SpyCatcher to Analyze Membrane Dynamics. <a href="#">Angew Chem Int Ed Engl. 56 (52): 16521-16525.</a></li><li>2. Hentrich, C. <i>et al.</i> (2021) Periplasmic expression of SpyTagged antibody fragments enables rapid modular antibody assembly. <a href="#">Cell Chem Biol. 28 (6): 813-824.e6.</a></li><li>3. Dauben, H. &amp; Matić, I. (2025) Versatile Modular Antibodies for Sensitive and Specific Detection of Poly-ADP-Ribose <a href="#">bio-Rxiv 10 Sep [Preprint].</a></li></ol>
<b>Storage</b>	Store at -20°C only. Storage in frost-free freezers is not recommended.

This product should be stored undiluted. Avoid repeated freezing and thawing as this may denature the protein. Should this product contain a precipitate we recommend microcentrifugation before use.

<b>Guarantee</b>	12 months from date of despatch
<b>Acknowledgements</b>	This product and/or its use is covered by claims of U.S. patents, and/or pending U.S. and non-U.S. patent applications owned by or under license to Bio-Rad Laboratories, Inc. See <a href="https://www.bio-rad.com/en-us/trademarks">bio-rad.com/en-us/trademarks</a> for details.
<b>Health And Safety Information</b>	Material Safety Datasheet documentation #20484 available at: <a href="https://www.bio-rad-antibodies.com/SDS/TZC002CYS">https://www.bio-rad-antibodies.com/SDS/TZC002CYS</a> 20484
<b>Licensed Use</b>	For <i>in vitro</i> research purposes. Any re-sale in any form or any other commercial application needs a written agreement with Bio-Rad.
<b>Regulatory</b>	For research purposes only

## Related Products

### Recommended Useful Reagents

[BiSpyCatcher2 \(TZC002\)](#)

[BiSpyCatcher2:Biotin \(TZC002B\)](#)

[BiSpyCatcher2-CYS3 \(TZC002CYS3\)](#)

[BiSpyCatcher2:HRP \(TZC002P\)](#)

[SpyTag3 PEPTIDE \(BLP086\)](#)

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To find a batch/lot specific datasheet for this product, please use our online search tool at: [bio-rad-antibodies.com/datasheets](https://www.bio-rad-antibodies.com/datasheets)  
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