

# PRODUCT INFORMATION



## Citrullinated Glucose-6-phosphate Isomerase (human, recombinant)

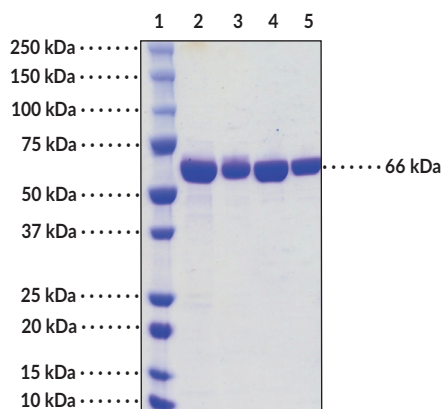
Item No. 30967

### Overview and Properties

**Synonyms:** GPI, PGI, PHI, Phosphoglucose Isomerase, Phosphohexose Isomerase  
**Source:** Recombinant C-terminal His-tagged protein expressed in *E. coli* citrullinated by PAD2  
**Amino Acids:** 1-434 (full length)  
**Uniprot No.:** P06744  
**Molecular Weight:** 66 kDa  
**Storage:** -80°C (as supplied)  
**Stability:** ≥1 year  
**Purity:** ≥90% estimated by SDS-PAGE  
**Supplied in:** 25 mM Tris, pH 7.0, with 100 mM sodium chloride, and 10% glycerol  
**Protein Concentration:** *batch specific* mg/ml

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images



Lane 1: MW Markers  
Lane 2: GPI (4 µg)  
Lane 3: GPI (2 µg)  
Lane 4: Cit. GPI (4 µg)  
Lane 5: Cit. GPI (2 µg)

SDS-PAGE Analysis of Citrullinated Glucose-6-phosphate Isomerase.

Representative gel image shown; actual purity may vary between each batch.

10	20	30	40	50
MGSAEGSSMA	ALTRDPQFQK	LQQWYREHRS	ELNLRRLFDA	NKDRFNHFSL
60	70	80	90	100
TLNTNHGHIL	VDYSKNLSTE	DVMRMLVDLA	KSRGVEAARE	RMFNGEKINY
110	120	130	140	150
TEGRAVLHVA	LRNRSNTPII	VDGKDVMPEV	NKVLDDKMKSF	CQQRVRSQGDWK
160	170	180	190	200
GYTGKTITDV	INIGIGGSDL	GPLMVTEALK	PYSSGGPRVW	YVSNIDGTHI
210	220	230	240	250
AKTLAQLNPE	SSLFIIASKT	FTTQETITNA	ETAKEWFLQA	AKDPSAVAKH
260	270	280	290	300
FVALSTNTTK	VKEFGIDPQN	MFEFWDWVGG	RYSLWSAIGL	SIALHVGFDN
310	320	330	340	350
FEQLLSGAHW	MDQHFRTTPL	EKNAPVLLAL	LGIWYINCFG	CETHAMLPYD
360	370	380	390	400
QYLHRFAAYF	QQGDMESNGK	YITKSGTRVD	HQTGPIVWGE	PGTNGQHAFY
410	420	430	440	450
QLIHQGTKMI	PCDFLIPVQT	QHPIRKGHH	KILLANFLAQ	TEALMRGKST
460	470	480	490	500
EEARKELQAA	GKSPEDLERL	LPHKVFEGNR	PTNSIVFTKL	TPFMLGALVA
510	520	530	540	550
MYEHKIFVQG	IWDINSFDQ	WGVELGKQLA	KKIEPELDGS	AQVTSHDAST
560	570	580		
NGLINFIKQQ	REARVQTFPQ	QKLAALAEHH	HHHH	

#### Identification of modified sites in Citrullinated Glucose-6-phosphate Isomerase (Item No. 30967).

Citrullinated Glucose-6-phosphate Isomerase was detected by LC-MS/MS and analyzed using Mascot and Scaffold PTM software. Deiminated arginines are indicated in teal.

Citrullination sites shown are representative of typical results. Batch-to-batch variations may occur.

WARNING  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY  
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# PRODUCT INFORMATION



## Description

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Glucose-6-phosphate isomerase (GPI) is a glycolytic enzyme that catalyzes the conversion of D-glucose-6-phosphate (Item No. 20376) to D-fructose-6-phosphate.<sup>1,2</sup> It exists as a dimer where each monomer is composed of a large and small globular domain, which form a cleft that contains the catalytic active site, and a C-terminal tail.<sup>2,3</sup> GPI is ubiquitously expressed and localized to the cytoplasm.<sup>1,2</sup> It also functions as a neurotrophic growth factor and has a role in immunoglobulin synthesis.<sup>2</sup> GPI is an autoantigen in rheumatoid arthritis (RA).<sup>4</sup> Immunization with recombinant human GPI induces inflammatory cell infiltration, cartilage destruction, and bone erosion in the inflamed joints of mice, an effect that is reduced in *Padi4* knockout mice, which lack peptidyl arginine deiminase 4 (PAD4), an enzyme involved in protein citrullination.<sup>5</sup> Citrullinated GPI autoantibodies have been found in the serum of patients RA.<sup>4</sup>

## References

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1. Schaller, M., Burton, D.R., and Ditzel, H.J. Autoantibodies to GPI in rheumatoid arthritis: Linkage between an animal model and human disease. *Nat. Immunol.* **2**(8), 746-753 (2001).
2. Sun, Y.-J., Chou, C.-C., Chen, W.-S., *et al.* The crystal structure of a multifunctional protein: Phosphoglucose isomerase/autocrine motility factor/neuroleukin. *Proc. Natl. Acad. Sci. USA* **96**(10), 5412-5417 (1999).
3. Cordeiro, A.T., Michels, P.A.M., Delboni, L.F., *et al.* The crystal structure of glucose-6-phosphate isomerase from *Leishmania mexicana* reveals novel active site features. *Eur. J. Biochem.* **271**(13), 2765-2772 (2004).
4. Umeda, N., Matsumoto, I., Ito, I., *et al.* Anti-citrullinated glucose-6-phosphate isomerase peptide antibodies in patients with rheumatoid arthritis are associated with HLA-DRB<sub>1</sub> shared epitope alleles and disease activity. *Clin. Exp. Immunol.* **172**(1), 44-53 (2013).
5. Seri, Y., Shoda, H., Suzuki, A., *et al.* Peptidylarginine deiminase type 4 deficiency reduced arthritis severity in a glucose-6-phosphate isomerase-induced arthritis model. *Sci. Rep.* **5**, 13041 (2015).