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Product Information

Proteomics Dynamic Range Standard Set

Catalog Number **UPS2**
Storage Temperature –20 °C

**** Two proteins, P07339 and P08311, previously supplied in UPS2 have been permanently replaced with O76070 and P01579.**

Product Description
The Proteomics Dynamic Range Standard Set (UPS2) is comprised of one vial of Proteomics Dynamic Range Standard (Catalog Number S5697) and one vial (20 µg) of Proteomics Grade Trypsin (Catalog Number T6567).

The Proteomics Dynamic Range Standard is produced from a mixture of 48 individual human source or human sequence recombinant proteins, each of which has been selected to limit heterogeneous post-translational modifications (PTMs). The protein standard has a dynamic range of 5 orders of magnitude, ranging from 50 pmoles to 500 amoles. The total protein content in each vial is 10.6 µg. Each protein has been quantitated by amino acid analysis (AAA) prior to formulation.

The standard contains the same proteins included in the Universal Proteomics Standard (UPS1) and is formulated from 6 mixtures of different concentrations. Each mixture contains 8 different proteins selected to present a diverse group of proteins, e.g., varying molecular masses, isoelectric points, and hydrophobicities.

UPS2 can be used to standardize and/or evaluate mass spectrometric (e.g., LC-MS/MS, MALDI-TOF-MS, etc.) and electrophoretic analysis conditions prior to the analysis of complex protein samples. Moreover, UPS2 can be used to bracket precious experimental data sets between runs of a known complex standard sample, thereby, confirming the robustness of the analysis method and stability of the instrument employed. Additionally, laboratories generating or comparing mass spectrometric data derived from poorly defined samples can use UPS2 as an external reference to assist with the evaluation of results and experimental methodology. Running of UPS2 as an external standard can facilitate the comparison of mass spectrometric or other proteomic data that are generated in different laboratories using a wide range of workflows, analytical techniques, and instrumentation. Also UPS2 can potentially help identify limitations of proteomics analysis systems and search algorithms.[1,2]

A FASTA file, which contains the protein sequences and can be appended to any database, is available for download at sigma.com/ups.

Components

Proteomics Dynamic Range Standard 48 human proteins ranging from 50 picomoles to 500 attomoles dried in a 0.5 mL vial. Total protein content is 10.6 µg. Catalog Number S5697	1 vial
Proteomics Grade Trypsin lyophilized enzyme Catalog Number T6567	20 µg

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
The preparation procedure should be compatible with the analysis to be performed. For peptide analysis, it is suggested that proteins be dissolved in an appropriate denaturant prior to reduction, alkylation, and tryptic digestion.

Storage/Stability
The set ships on wet ice and storage at –20 °C is recommended. After reconstitution and/or digestion, the standard should be dispensed into microcentrifuge tubes in single use aliquots and frozen.

References
1. Tabb, D.L. *et al., J. Proteome Res.*, **6**, 654-661 (2007).
2. Uwaje, N.C. *et al., Electrophoresis*, **28**(12), 1867-1874 (2007).
3. UniProt (Universal Protein Resource), © 2009 by UniProt Consortium. http://www.uniprot.org/

UniProt Accession Number[3]	Amount (fmoles)	UniProt Recommended Name (Short name)	Average MW (Da) (calculated)	Chain	Source or recombinant	Host	Tag	Potential PTM*
P00915	50000	Carbonic anhydrase 1	28,739	2-261	Erythrocytes			Acetylation
P00918	50000	Carbonic anhydrase 2	29,115	2-260	Erythrocytes			Acetylation
P01031	50000	Complement C5/C5a anaphylatoxin	8,563	678-751	Recombinant	*E. coli*	Glutathione on Cys^{705}	
P69905	50000	Hemoglobin subunit alpha	15,126	2-142	Erythrocytes			Glycosylation Phosphorylation
P68871	50000	Hemoglobin subunit beta	15,867	2-147	Erythrocytes			Acetylation Glycosylation Nitrosylation Phosphorylation
P41159	50000	Leptin	16,158	22-167	Recombinant	*E. coli*		
P02768	50000	Serum albumin	66,357	26-609	Recombinant	*Pichia pastoris*		
P62988	50000	Ubiquitin	10,597	1-76	Recombinant	*E. coli*	N-terminal 6-His	
P04040	5000	Catalase	59,625	2-527	Erythrocytes			Phosphorylation
P00167	5000	Cytochrome b_5	16,022	2-134	Recombinant	*E. coli*	N-terminal 6-His	
P01133	5000	Pro-epidermal growth factor (EGF)/Epidermal growth factor	6,353	971-1023	Recombinant	*E. coli*		
P02144	5000	Myoglobin	17,053	2-154	Heart			
P15559	5000	NAD(P)H dehydrogenase [quinone] 1	30,736	2-274	Recombinant	*E. coli*		
P62937	5000	Peptidyl-prolyl cis-trans isomerase A (PPIase A, Rotamase A)	20,176	1-165	Recombinant	*E. coli*	N-terminal 6-His	
Q06830	5000	Peroxiredoxin 1	21,979	2-199	Recombinant	*E. coli*		
P63165	5000	Small ubiquitin-related modifier 1 (SUMO-1)	38,815	1-97	Recombinant	*E. coli*	N-terminal GST	
P00709	500	Alpha-lactalbumin	14,078	20-142	Milk			Glycosylation
P06732	500	Creatine kinase M-type	43,101	1-381	Heart			
P12081	500	Histidyl-tRNA synthetase, cytoplasmic	58,233	1-509	Recombinant	*E. coli*	C-terminal 6-His	
P61626	500	Lysozyme C	14,701	19-148	Milk			
Q15843	500	NEDD8	9,072	1-81	Recombinant	*E. coli*		
P02753	500	Retinol-binding protein 4	21071	19-201	Urine			
P16083	500	Ribosyldihydronicotinamide dehydrogenase [quinone]	25,821	2-231	Recombinant	*E. coli*		
P63279	500	SUMO-conjugating enzyme UBC9	18,007	1-158	Recombinant	*E. coli*		

UniProt Accession Number[3]	Amount (fmoles)	UniProt Recommended Name (Short name)	Average MW (Da) (calculated)	Chain	Source or recombinant	Host	Tag	Potential PTM*
P01008	50	Antithrombin-III (ATIII)	49,039	33-464	Plasma			Glycosylation
P61769	50	Beta-2-microglobulin	11,731	21-119	Urine			
P55957	50	BH3-interacting domain death agonist	21,995	1-195	Recombinant	*E. coli*		
O76070**	50	Gamma-synuclein	15,363	1-127	Recombinant	*E. coli*	N-terminal 6-His	
P08263	50	Glutathione S-transferase A1 (GTH1, HA subunit 1)	25,500	2-222	Recombinant	*E. coli*		
P01344	50	Insulin-like growth factor II (IGF-II)	7,475	25-91	Recombinant	*E. coli*		
P01127	50	Platelet-derived growth factor subunit B (PDGF subunit B)	12,294	82-190	Recombinant	*E. coli*		
P10599	50	Thioredoxin (Trx)	12,429	2-105	Recombinant	*E. coli*	N-terminal 6-His	
P99999	5	Cytochrome c	11,618	2-105	Recombinant	*E. coli*		
P06396	5	Gelsolin	82,959	28-782	Plasma			Phosphorylation
P09211	5	Glutathione S-transferase P	23,225	2-210	Placenta			
P01112	5	GTPase HRas	21,298	1-189	Recombinant	*E. coli*		
P01579**	5	Interferon gamma (IFN-gamma)	16,879	23-166	Recombinant	*E. coli*		
P02787	5	Serotransferrin (Transferrin)	75,181	20-698	Plasma			Phosphorylation Glycosylation
O00762	5	Ubiquitin-conjugating enzyme E2 C	20,475	1-179	Recombinant	*E. coli*	N-terminal 6-His	
P51965	5	Ubiquitin-conjugating enzyme E2 E1	22,227	1-193	Recombinant	*E. coli*	N-terminal 6-His	
P08758	0.5	Annexin A5	35,806	2-320	Placenta			Acetylation Phosphorylation
P02741	0.5	C-reactive protein	23,047	19-224	Plasma			
P05413	0.5	Fatty acid-binding protein, heart	14,727	2-133	Heart			Acetylation Phosphorylation
P10145	0.5	Interleukin-8 (IL-8)	8,386	28-99	Recombinant	*E. coli*		
P02788	0.5	Lactotransferrin (Lactoferrin)	76,165	20-710	Milk			Glycosylation Phosphorylation
P10636-8	0.5	Microtubule-associated protein tau	45,719	2-441	Recombinant	*E. coli*		
P00441	0.5	Superoxide dismutase [Cu-Zn]	15,805	2-154	Erythrocytes			Acetylation Phosphorylation
P01375	0.5	Tumor necrosis factor/Tumor necrosis factor, soluble form	17,353	77-233	Recombinant	*E. coli*		

* As reported in UniProt. Potential PTM have not been verified by Sigma

** Permanently replaced proteins P07339 and P08311, previously supplied with UPS2.