



**Cell Therapy Systems
Recombinant Human
Granulocyte-Macrophage Colony
Stimulating Factor CTS™
(GM-CSF)**

PRODUCT ANALYSIS SHEET

Catalog Number:	CTP2011	CTP2013
Quantity:	100 µg	1 mg
Lot Number:	See product label	
Molecular Weight:	14 kDa	
Purity:	>95% as determined by SDS-PAGE analysis.	
Biological Activity:	ED ₅₀ range = 0.02 to 0.1 ng/mL, determined by the dose dependent proliferation of human TF-1 cells. Optimal concentration for individual application should be determined by a dose response assay.	
Formulation:	Lyophilized, carrier free.	
Sterility:	Filtered prior to lyophilization through a 0.22 micron sterile filter.	
Endotoxin:	<0.1 ng/µg	
Production:	Recombinant human GM-CSF is produced in <i>E. coli</i> and purified via sequential chromatography.	
Reconstitution Recommendation:	We recommend that the vial be briefly centrifuged prior to opening to bring the contents to the bottom. Lyophilized recombinant human GM-CSF should be reconstituted in sterile, distilled water to 0.1-1.0 mg/mL to regain full activity. These stock solutions should be apportioned into working aliquots and stored at ≤ -20°C. Further dilutions should be made in medium or buffered solution containing carrier protein, such as PBS with 0.1% BSA. It is recommended that all culture media containing supplements, such as growth factor, be sterile filtered prior to use for cell, gene, or tissue-based applications to minimize risk of contamination.	
Suggested Working Dilutions:	The optimal concentration should be determined for each specific application.	
Storage:	Lyophilized human GM-CSF should be stored at 2-8°C, preferably desiccated. Store reconstituted human GM-CSF at ≤ -20°C (not in a frost-free freezer). Keep freeze-thaw cycles to a minimum.	
Expiration Date:	Expires one year from date of receipt when stored as instructed.	
References:	Callard, R.E. and A.J. Gearing (1994) <i>The Cytokine Fact Book</i> . pp. 139-140. Academic Press Inc. San Diego, CA. Gubina, E., X. Luo, E. Kwon, K. Sakamoto, Y.F. Shi, and R.A. Mufson (2001) β c cytokine receptor-induced stimulation of cAMP response element binding protein phosphorylation requires protein kinase C in myeloid cells: A novel cytokine signal transduction cascade. <i>J. Immunol.</i> 167(8):4303-4310. Kahlert, H., E. Grage-Griebenow, H.T. Stuwe, O. Cromwell, and H. Fiebig (2000) T cell reactivity with allergoids: Influence of the type of APC. <i>J. Immunol.</i> 165(4):1807-1815.	

For Research Use or Non-Commercial Manufacturing of Cell Based Products for Clinical Research.

CAUTION: Not intended for direct administration into humans or animals www.invitrogen.com

Manufactured under ISO 13485 Quality Standard

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For technical support or support related to CTS™ products, www.invitrogen.com/celltherapysupport

PICTS-Hu GM CSF

(Rev 07/10) DCC-10-1460

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References (cont'd):














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Yu, W.G., J. Cassara, and P.F. Weller (2000) Phosphatidylinositide 3-kinase localizes to cytoplasmic lipid bodies in human polymorphonuclear leukocytes and other myeloid-derived cells. *Blood* 95:1078-1085.

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Explanation of symbols

Symbol	Description	Symbol	Description
	Catalogue Number		Batch code
	Research Use Only		<i>In vitro</i> diagnostic medical device
	Use by		Temperature limitation
	Manufacturer		European Community authorised representative
	Without, does not contain		With, contains
	Protect from light		Consult accompanying documents
	Directs the user to consult instructions for use (IFU), accompanying the product.		

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