

# PRODUCT INFORMATION



## Coagulation Factor X (human, recombinant)

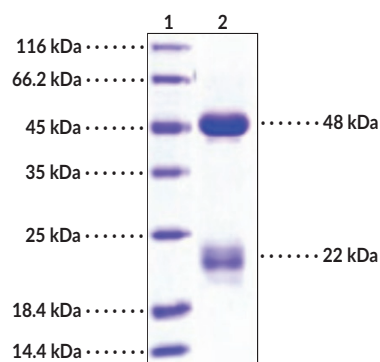
Item No. 40252

### Overview and Properties

**Synonyms:** Factor 10, Factor X, FX, Stuart Factor, Stuart-Prower Factor, Thrombokinase  
**Source:** Recombinant human C-terminal His-tagged coagulation factor X expressed in insect cells  
**Amino Acids:** 1-488 (full length)  
**Uniprot No.:** P00742  
**Molecular Weight:** 52.8 kDa  
**Storage:** -80°C (as supplied)  
**Stability:** ≥1 year  
**Purity:** ≥97% estimated by SDS-PAGE  
**Supplied in:** Lyophilized from sterile 50 mM Tris, pH 8.0, 100 mM sodium chloride, and 10% glycerol  
**Endotoxin Testing:** < 1.0 EU/μg, determined by the LAL endotoxin assay

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

### Images



Lane 1: MW Markers  
Lane 2: Coagulation Factor X

**SDS-PAGE Analysis of Coagulation Factor X.** This protein has a calculated molecular weight of 52.8 kDa. It has an apparent molecular weight of approximately 48 and 22 kDa by SDS-PAGE under reducing conditions due to glycosylation.

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  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD

ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897

[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM

WWW.CAYMANCHEM.COM

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## Description

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Coagulation Factor X is a vitamin K-dependent plasma serine protease involved in the intrinsic, extrinsic, and common pathways of the blood coagulation cascade.<sup>1,2</sup> It is composed of an N-terminal light chain that contains a signal sequence, a propeptide, carboxylated glutamic acid residues (Gla domain), and two EGF domains and a C-terminal heavy chain that contains the activation peptide and a chymotrypsin-like catalytic domain.<sup>1</sup> Coagulation Factor X is produced as an inactive precursor, which is activated to Factor Xa following signal peptide cleavage, glycosylation, and further cleavage by the Factor VIIIa-IXa or tissue factor-FVIIa complexes of the intrinsic or extrinsic pathways, respectively. Factor Xa, in complex with Factor Va, converts prothrombin to thrombin. Factor Xa also cleaves severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike glycoprotein, also known as surface glycoprotein, and prevents SARS-CoV-2 viral entry *in vitro*, and Factor X levels are increased in the lungs of patients with COVID-19.<sup>3</sup> Knockout of *F10*, the gene encoding Factor X, in mice induces embryonic lethality and fatal internal bleeding of surviving neonates.<sup>4</sup> Mutations in *F10* result in Factor X deficiency, a rare bleeding disorder characterized by CNS and gastrointestinal bleeding, as well as hemarthroses and hematomas.<sup>1</sup> Cayman's Coagulation Factor X (human, recombinant) protein consists of 468 amino acids, has a calculated molecular weight of 52.8 kDa, and a predicted N-terminus of Asn32 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the apparent molecular masses are 48 and 22 kDa, corresponding to the cleaved heavy and light chains, respectively, due to glycosylation.

## References

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1. Camire, R.M. Blood coagulation factor X: Molecular biology, inherited disease, and engineered therapeutics. *J. Thromb. Thrombolysis* **52(2)**, 383-390 (2021).
2. Schenone, M., Furie, B.C., and Furie, B. The blood coagulation cascade. *Curr. Opin. Hematol.* **11(4)**, 272-277 (2004).
3. Dong, W., Wang, J., Tian, L., *et al.* Factor Xa cleaves SARS-CoV-2 spike protein to block viral entry and infection. *Nat. Commun.* **14(1)**, 1936 (2023).
4. Dewerchin, M., Liang, Z., Moons, L., *et al.* Blood coagulation factor X deficiency causes partial embryonic lethality and fatal neonatal bleeding in mice. *Thromb. Haemost.* **83(2)**, 185-190 (2000).

CAYMAN CHEMICAL  
1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA  
PHONE: [800] 364-9897  
[734] 971-3335  
FAX: [734] 971-3640  
CUSTSERV@CAYMANCHEM.COM  
WWW.CAYMANCHEM.COM