

# Upstream Chemicals for Bioprocessing

Our comprehensive portfolio of upstream process chemicals not only provides biopharmaceutical manufacturers with high-quality raw materials for classic and novel therapies, but also helps them get to market faster and simplify regulatory challenges.

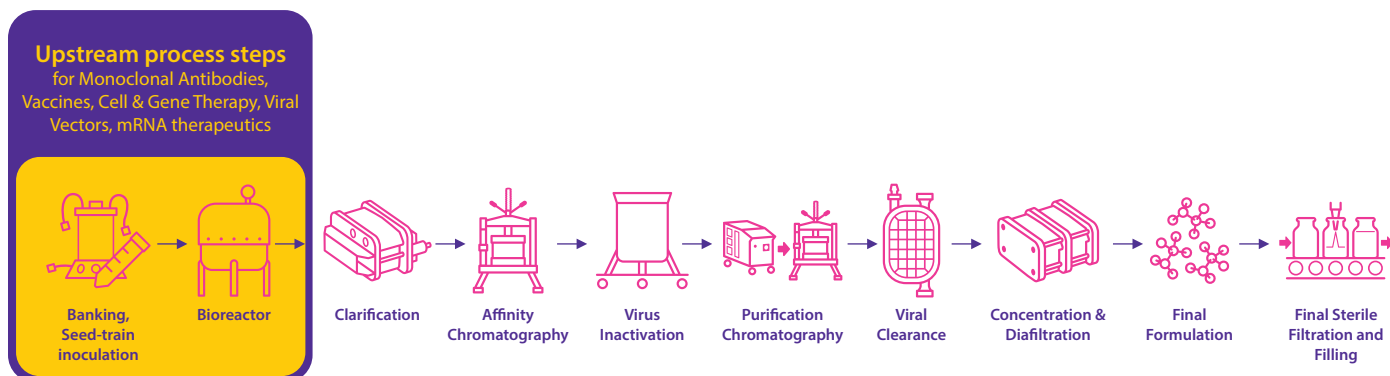
Our cell culture media, purification and clean-in-place products offer trusted and consistent performance at every stage, from research to commercial application. Equally important, we deliver supply chain transparency and reliable sourcing around the globe, streamlining product qualification with best-in-class regulatory support and service.



## Critical Raw Materials for Commercial Biopharmaceutical Manufacturing

Our upstream process chemicals are high-purity raw materials used throughout the biopharmaceutical manufacturing process. They are specified to meet requirements from media preparation to cell culture and separation to harvest. The range includes:

- Carbohydrates
- Amino acids
- Mineral salts
- Vitamins
- Buffer salts (inorganic and organic buffers)
- Lipids



We offer reliable and transparent supply chains, comprehensive documentation that goes beyond today's regulatory standards, and efficient distribution networks. Our technical service puts our vast knowledge at your fingertips as you optimize your processes: product purity, production, regulatory compliance, and product handling (ease-of-use).

## Emprove® Chemicals for Quality and Regulatory Support

Controlled manufacturing processes, optimized quality attributes, and precise analytical specifications make our raw materials well-suited for commercial biopharma processing. Now they go even further to simplify your qualification and risk assessment, as part of our industry-leading Emprove® Chemicals portfolio. All raw materials are organized into categories to streamline selection, with each product offering the comprehensive, up-to-date documentation you need to navigate regulatory challenges, manage risks, and improve processes.

- Emprove® Evolve is for early stages of biopharmaceutical manufacturing, bridging the gap between lab-grade and GMP compliant raw materials while providing transparent supply chain information and documentation.

- Emprove® Essential is for moderate-risk applications, offering compliance to IPEC-PQG GMP Guide and EXCiPACT™ Certification Standard, as well as supply chain transparency and regulatory support designed to assist drug manufacturers' formalized risk assessments.
- Emprove® Expert is for higher-risk applications where the lowest microbiological and endotoxin levels are of utmost importance. Along with the risk management features of Emprove® Essential, the Emprove® Expert line yields products with specified low microbiological and endotoxin levels, supporting the overall risk mitigation strategy.

Former PharmaGrade™ products will be transitioned to the Emprove® Program. Product documentation will continue to be available in the known format until the new product and Emprove® dossier are launched.

## Portfolio

We offer a broad portfolio of raw materials and chemical components suitable for cell culture media formulations and upstream applications used in biopharmaceutical production.

### Amino Acids

Product Name	CAS No.	Pack Size	Cat. No.
Glycine	56-40-6	1 kg, 10 kg, 25 kg	<b>G5417</b>
GlycylGlycine	556-50-3	100 gm	<b>G0674</b>
L-Alanine Emprove® Expert, Ph Eur, JP, USP	56-41-7	1 kg, 10 kg	<b>101700</b>
L-Arginine	74-79-3	1 kg, 10 kg, 25 kg	<b>A4474</b>
L-Arginine Monohydrochloride	1119-34-2	1 kg, 10 kg, 25 kg	<b>A4599</b>
L-Asparagine Monohydrate Emprove® Expert, Ph Eur	5794-13-8	1 kg, 5 kg, 10 kg	<b>101565</b>
L-Asparagine Monohydrate	5794-13-8	1 kg, 10 kg	<b>RES10070-A7</b>
L-Aspartic Acid Emprove® Essential, Ph Eur, BP, USP	56-84-8	1 kg, 25 kg	<b>100129</b>
L-Cysteine	52-90-4	1 kg, 10 kg, 25 kg	<b>C5360</b>
L-Cysteine Hydrochloride Monohydrate Emprove® Essential, Ph Eur, USP	7048-04-6	1 kg, 10 kg, 25 kg	<b>102735</b>
L-Cysteine-S-Sulfate Sodium Salt Sesquihydrate Emprove® Expert	150465-29-5	100 gm	<b>137116</b>
L-Cystine	56-89-3	1 kg, 10 kg, 25 kg	<b>C5735</b>
L-Cystine Dihydrochloride Non-Animal Derived	30925-07-6	10 kg	<b>RES1513C-A7</b>
L-Glutamic Acid Emprove® Expert, Ph Eur, JP	56-86-0	1 kg	<b>101791</b>
L-Glutamic Acid Sodium Salt, low endotoxin	142-47-2	1 kg, 10 kg, 25 kg	<b>RES5063G-A7</b>
L-Glutamine Emprove® Essential, DAB, USP	56-85-9	1 kg, 10 kg	<b>100286</b>
L-Glutamine	56-85-9	1 kg, 10 kg, 25 kg	<b>G5792</b>
L-Histidine	71-00-1	1 kg, 10 kg, 25 kg	<b>H3911</b>
L-Histidine Monohydrochloride Monohydrate	5934-29-2	1 kg, 10 kg, 25 kg	<b>H4036</b>
L-Isoleucine Emprove® Essential, Ph Eur, USP	73-32-5	1 kg, 10 kg	<b>105357</b>
L-Isoleucine	73-32-5	1 kg, 10 kg, 25 kg	<b>I5281</b>
L-Leucine Emprove® Expert, Ph Eur, USP	61-90-5	1 kg, 10 kg	<b>105020</b>
L-Lysine Monohydrochloride Emprove® Essential, Ph Eur, BP, USP	657-27-2	1 kg, 5 kg, 25 kg	<b>105701</b>
L-Methionine	63-68-3	1 kg, 10 kg, 25 kg	<b>M8439</b>
L-Phenylalanine Emprove® Expert, Ph Eur, USP	63-91-2	1 kg, 10 kg	<b>107267</b>
L-Proline Emprove® Expert, Ph Eur, USP	147-85-3	1 kg, 10 kg	<b>107430</b>
L-Proline	147-85-3	1 kg, 10 kg, 25 kg	<b>P8865</b>
L-Threonine	72-19-5	1 kg, 10 kg, 25 kg	<b>T4071</b>
L-Tryptophan Emprove® Expert, Ph Eur, BP, USP	73-22-3	1 kg	<b>108396</b>

Product Name	CAS No.	Pack Size	Cat. No.
L-Tyrosine Emprove® Expert, Ph Eur, JP, USP	60-18-4	1 kg, 10 kg	108378
L-Tyrosine Disodium Salt Dihydrate	122666-87-9	1 kg, 10 kg	RES3156T-A7
L-Valine	72-18-4	1 kg, 10 kg, 25 kg	V4638
Phospho-L-Tyrosine Disodium Salt Emprove® Expert	1610350-91-8	1 kg, 10 kg	137119

## Carbohydrates

Product	CAS No.	Pack Size	Cat. No.
D-(+)-Glucose Anhydrous Emprove® Expert Ph Eur, BP, USP, ACS	50-99-7	1 kg, 3 kg, 5 kg, 12 kg, 25 kg, 50 kg	137048
D(+)-Galactose, Plant-Derived, Emprove® Expert, Ph Eur, NF	59-23-4	1 kg, 10 kg, 25 kg	137129
N-Acetyl-D-Mannosamine	7772-94-3	10 gm, 100 gm, 1 kg	PHG0017

## Buffers

Product	CAS No.	Pack Size	Cat. No.
HEPES Emprove® Expert	7365-45-9	250 gm, 1 kg, 25 kg	110110
HEPES	7365-45-9	5 kg, 10 kg, 25 kg, 50 kg	PHG0001
HEPES	7365-45-9	5 kg, 25 kg, 50 kg	RES6003H-B7
HEPES Hemisodium Salt	103404-87-1	1 kg, 10 kg	RES6008H-A7
HEPES Sodium Salt	75227-39-3	1 kg, 10 kg, 25 kg	RES6007H-A7
Sodium Carbonate Anhydrous Emprove® Expert, Ph Eur, BP, JP, NF	497-19-8	1 kg, 5 kg, 12 kg, 25 kg	137014
Sodium Hydrogen Carbonate Emprove® Expert, Ph Eur, BP, USP, JP	144-55-8	1 kg, 2.5 kg, 12 kg, 25 kg	137013

## Lipids

Product	CAS No.	Pack Size	Cat. No.
SyntheChol® Synthetic Cholesterol, For Cell Culture, Emprove® Expert	57-88-5	1 gm, 10 gm, 100 gm, 1 kg	137672
Linoleic Acid	60-33-3	10 gm, 100 gm	39269
Oleic Acid	112-80-1	10 gm, 100 gm	91541
Sodium Butyrate Emprove® Expert, USP	156-54-7	250 gm, 1 kg, 10 kg, 30 kg	137127
Sodium Cholate Hydrate	206986-87-0	100 gm, 1 kg	S1702
Sodium Deoxycholate	302-95-4	100 gm, 1 kg, 10 kg	S1827
Sodium Pyruvate Emprove® Essential	113-24-6	250 gm, 1 kg	105477

## Specialty Components

Product	CAS No.	Pack Size	Cat. No.
1-Thioglycerol Emprove® Essential	96-27-5	50g, 500g	108704
2-Mercaptoethanol Emprove® Essential	60-24-2	100 mL	137151
Biotin	58-85-5	1 gm, 10 gm, 25 gm	RES1052B-A7
Cystamine Dihydrochloride Emprove® Essential	56-17-7	100 gm	108318
Cysteamine Hydrochloride Emprove® Essential	156-57-0	100 gm, 1 kg	137139
Dextran Sulfate Sodium Salt	9011-18-1	10 gm, 100 gm, 1 kg	RES2029D-A7
Ferric Ammonium Citrate	1185-57-5	1 kg, 5 kg	RES20400-A7
Ferric Citrate	2338-05-08	1 kg, 5 kg	RES4055F-A7
Hypoxanthine Sodium Salt	45738-97-4	100 gm, 1 kg	RES6104H-A7
L-Methionine Sulfoximine Emprove® Essential	15985-39-4	1 gm, 5 gm, 10 gm	104309
Methotrexate	59-05-2	1 gm, 5 gm	M7824
Phenol Red Emprove® Essential	143-74-8	5 gm, 100 gm	137038
Poloxamer 188 Emprove® Expert, cell culture optimized	9003-11-6	1 kg, 10 kg, 25 kg	137097
Spermine Tetrahydrochloride Emprove® Evolve	306-67-2	25 gm, 100 gm	137141
Taurine	107-35-7	1 kg, 10 kg	T4571
Tropolone Emprove® Evolve	533-75-5	5g	108637
Uridine Emprove® Evolve	58-96-81	1 kg, 5 kg, 10 kg	137607

## To place an order or receive technical assistance

In Europe, please call Customer Service:

France: 0825 045 645	Spain: 901 516 645 Option 1
Germany: 069 86798021	Switzerland: 0848 645 645
Italy: 848 845 645	United Kingdom: 0870 900 4645

For other countries across Europe, please call: +44 (0) 115 943 0840

Or visit: [MerckMillipore.com/offices](https://www.MerckMillipore.com/offices)

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