

## SECTION B — PERFORMING OPERATIONS; TRANSPORTING

### B01 PHYSICAL OR CHEMICAL PROCESSES OR APPARATUS IN GENERAL

#### B01F MIXING, e.g. DISSOLVING, EMULSIFYING, DISPERSING (mixing paints B44D 3/06)

##### Note(s)

In this subclass, the following term or expression is used with the meaning indicated:

- "mixing" covers stirring of a single material.

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<b>1/00</b>	<b>Dissolving</b> (separating by dissolving B01D; dissolving to effect cooling F25D 5/00) [2]	5/16	• • Turbo-mixers
		5/18	• Spray-mixers
<b>3/00</b>	<b>Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed</b>	5/20	• • with nozzles
3/02	• gases with gases or vapours	5/22	• • with rotary discs
3/04	• gases or vapours with liquids (mixing non-alcoholic beverages with gases A23L 2/54)	5/24	• Falling particle mixers with repeated action
3/06	• gases or vapours with solids	5/26	• Falling particle mixers with moving means, e.g. stirrers for increasing the mixing
3/08	• liquids with liquids; Emulsifying	<b>7/00</b>	<b>Mixers with rotary stirring devices in fixed receptacles; Kneaders</b> (B01F 13/04 takes precedence)
3/10	• • Mixing very viscous liquids	7/02	• with stirrers rotating about a horizontal or inclined axis
3/12	• liquids with solids (displacing one liquid by another in dispersions of solids in liquids B01D 12/00)	7/04	• • with paddles or arms
3/14	• • Mixing very viscous liquids with solids	7/06	• • with propellers
3/18	• solid with solids	7/08	• • with helices
3/20	• Pretreatment of the materials to be mixed	7/10	• • with rotary discs
3/22	• Aftertreatment of the mixture	7/12	• • with cylinders
		7/14	• • with stirrers having planetary motion
		7/16	• with stirrers rotating about a vertical axis
		7/18	• • with paddles or arms
		7/20	• • • with fixed axis
		7/22	• • with propellers
		7/24	• • with helices
		7/26	• • with rotary discs
		7/28	• • with cylinders
		7/30	• • with stirrers having planetary motion
		7/32	• • with openwork frames or cages
		<b>9/00</b>	<b>Mixers with rotating receptacles</b> (B01F 13/04 takes precedence)
		9/02	• rotating about a horizontal or inclined axis, e.g. drum mixers
		9/04	• • without bars

##### Mixers

<b>5/00</b>	<b>Flow mixers</b> (sprayers, atomisers B05B); <b>Mixers for falling materials, e.g. solid particles</b> (B01F 13/04 takes precedence; centrifugal mixers B04)
5/02	• Jet mixers
5/04	• Injector mixers
5/06	• Mixers in which the components are pressed together through slits, orifices, or screens (turbo-mixers B01F 5/16; colloid-mills B02C; mixing valves F16K 11/00)
5/08	• • Homogenising or emulsifying nozzles
5/10	• Circulation mixers
5/12	• Pump mixers
5/14	• • of the gear type

**B01F**

- 9/06 • • with fixed bars
  - 9/08 • • with rotating stirring devices
  - 9/10 • rotating about a vertical axis
  - 9/12 • • with paddles or arms
  - 9/14 • • with propellers
  - 9/16 • • with helices
  - 9/18 • • with rotary discs
  - 9/20 • • with cylinders
  - 9/22 • with stirrers having planetary motion
  
  - 11/00 Mixers with shaking, oscillating, or vibrating mechanisms** (B01F 13/04 takes precedence)
  - 11/02 • Mixing by means of ultrasonic vibrations
  - 11/04 • with pendulum stirrers
  
  - 13/00 Other mixers; Mixing plant, including combinations of dissimilar mixers**
  - 13/02 • Mixers with gas agitation, e.g. with air supply tubes
  - 13/04 • Mixers combined with safety devices
  - 13/06 • Mixers adapted for working at sub- or super-atmospheric pressure
  - 13/08 • Magnetic mixers
  - 13/10 • Mixing plant, including combinations of dissimilar mixers
  
  - 15/00 Accessories for mixers**
  - 15/02 • Feed or discharge mechanisms
  - 15/04 • Forming a predetermined ratio of the substances to be mixed (controlling ratio of two or more flows of fluid or fluent material G05D 11/02)
  - 15/06 • Heating or cooling systems
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- 17/00 Use of substances as emulsifying, wetting, dispersing, or foam-producing agents** (flotation agents B03D 1/001; used for particular applications, see the relevant classes, e.g. use of substances as detergents C11D) [3, 5]
  - 17/02 • Alkyl sulfonates or sulfuric acid ester salts derived from monohydric alcohols
  - 17/04 • Sulfonates or sulfuric acid ester salts derived from polyhydric alcohols or amino alcohols or derivatives thereof (sulfated or sulfonated fatty oils B01F 17/08)
  - 17/06 • Esters of higher fatty acids with hydroxyalkylated sulfonic acids or salts thereof
  - 17/08 • Sulfation or sulfonation products of fats, oils, waxes, or higher fatty acids or esters thereof with monovalent alcohols
  - 17/10 • Derivatives of low-molecular-weight sulfocarboxylic acids or sulfopolycarboxylic acids
  - 17/12 • Sulfonates of aromatic or alkylated aromatic compounds
  - 17/14 • Derivatives of phosphoric acid
  - 17/16 • Amines or polyamines
  - 17/18 • Quaternary ammonium compounds
  - 17/20 • Phosphonium and sulfonium compounds
  - 17/22 • Amides or hydrazides
  - 17/24 • • Amides of higher fatty acids with aminoalkylated sulfonic acids
  - 17/26 • Sulfonamides
  - 17/28 • Aminocarboxylic acids (protein hydrolysates B01F 17/30)
  - 17/30 • Proteins; Protein hydrolysates
  - 17/32 • Heterocyclic compounds
  - 17/34 • Higher-molecular-weight carboxylic acid esters (B01F 17/06 takes precedence)
  - 17/36 • • Esters of polycarboxylic acids
  - 17/38 • Alcohols, e.g. oxidation products of paraffins
  - 17/40 • Phenols
  - 17/42 • Ethers, e.g. polyglycol ethers of alcohols or phenols
  - 17/44 • • Ether carboxylic acids
  - 17/46 • • Ethers of aminoalcohols
  - 17/48 • • Cellulose ethers
  - 17/50 • Derivatives of lignin
  - 17/52 • Natural or synthetic resins or their salts
  - 17/54 • Silicon compounds
  - 17/56 • Glucosides; Mucilage; Saponines