

Definitions of Topical Dosage Forms

2/12/03

Dosage Form	Definition	Appearance	Formulation	Rheology
Gel	A usually translucent, non-greasy emulsion or suspension semisolid dosage form for external application to the skin, which contains a gelling agent in quantities sufficient ^a to impart a three-dimensional, cross-linked matrix. A gel provides a cooling sensation when applied to the skin.	Thick or thin, usually translucent; holds a stiff or soft peak when a drop is placed on a flat surface.	Usually hydrophilic, and contains sufficient ^a quantities of a gelling agent such as starch, cellulose derivatives, carbomers, magnesium-aluminum silicates, xanthan gum, colloidal silica, aluminum or zinc soaps.	
Lotion	An opaque, thin, non-greasy emulsion liquid dosage form for external application to the skin, which generally contains a water-based vehicle with > 50% of volatiles ^c and sufficiently low viscosity that it may be delivered by pouring. A lotion tends to evaporate rapidly with a cooling sensation when rubbed onto the skin.	Thin, opaque; holds no peak when a drop is placed on a flat surface.	Usually hydrophilic, and contains > 50% of volatiles as measured by LOD (loss on drying). ^c	< 30,000 cps ^d
Cream	An opaque, viscous, non-greasy to mildly greasy emulsion or suspension semisolid dosage form for external application to the skin, which contains < 50% of hydrocarbons or polyethylene glycols as the vehicle and/or > 20% of volatiles. ^c There are two types of creams: a hydrophilic cream with water as the continuous phase and a lipophilic cream with oil as the continuous phase. A cream tends to mostly evaporate or be absorbed when rubbed onto the skin.	Thick, opaque; holds a soft to stiff peak when a drop is placed on a flat surface.	<p>Hydrophilic creams^b have water (the aqueous phase) as the continuous phase. They contain oil-in-water emulsifying agents such as sodium or trolamine soaps, sulfated fatty alcohols, polysorbates and polyoxyl fatty acid and fatty alcohol esters combined, if necessary, with water-in-oil emulsifying agents.</p> <p>Lipophilic creams^b have oil (the lipophilic phase) as the continuous phase. They contain water-in-oil emulsifying agents such as wool alcohols, sorbitan esters and monoglycerides.</p>	> 30,000 cps ^d
Ointment	An opaque or translucent, viscous, greasy emulsion or suspension semisolid dosage form for external application to the skin, which generally contains a > 50% of hydrocarbon-based or a polyethylene glycol-based vehicle and < 20% of volatiles. ^c An ointment tends not to evaporate or be absorbed when rubbed onto the skin.	Thick, translucent or opaque; holds a stiff peak when a drop is placed on a flat surface.	Usually lipophilic, and contains > 50% of hydrocarbons or polyethylene glycols as the vehicle and < 20% of volatiles as measured by LOD.	

Paste	An opaque, viscous, greasy to mildly greasy semi-solid dosage form for external application to the skin, which contains a large proportion (i.e., 20-50%) of solids finely dispersed in an aqueous or fatty vehicle. A paste adheres well to the skin, forming a protective layer.	Very thick, opaque; holds a stiff peak when placed on a flat surface.	Contains a large proportion (20-50%) of dispersed solids in a fatty or aqueous vehicle.	
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^a For example see Gennaro, A.R. (ed) (2000), *Remington: The Science and Practice of Pharmacy*, 20th Edition, p. 746 and Liberman, Rieger, and Banker (eds)(1996), Chapter 10 (Zatz and Kushla) of *Pharmaceutical Dosage Forms: Disperse Systems*, Vol. 2, 2nd Edition.

^b European Pharmacopeia, 4th edition.

^c Measured as loss on drying by heating at 105°C until constant weight was achieved.

^d Measured with Brookfield viscometer at 25°C and 5 rpm.