

Type of paper	Weight(g/m ²) (gsm)	Properties	Applications
Kraft	70 -180	Strong paper that can be bleached white and printed or unbleached and brown. Usually used in multiple layers or 'plies' (4 ply are most common) to give the necessary strength. Can also be laminated to polythene or wax treated to give greater moisture protection. The different plies need not be the same weight of paper. Sack material is described from the outer ply inwards according to the number and weight of the layers (for example 2/90 1/80 kraft means that there are three plies, the two outer ones having a weight of 90 g/m ² and the inner having a weight of 80 g/m ²).	25 - 50 kg sacks for flour, sugar, dried fruits and vegetables
Vegetable parchment	40-75	Kraft paper that has been further treated with acid during its preparation to make the surface smoother and more resistant to penetration by oils or water (more greaseproof and greater wet strength than kraft paper). Negligible barrier properties to air or moisture and not heat sealable. Not therefore used to package foods that require protection against air or moisture pickup over a long storage period.	Fats such as butter or fresh/smoked fish
Sulphite paper	30 - 50	A lighter and weaker paper than Kraft or parchment, usually made with a glazed surface to improve the appearance and to increase wet strength and oil resistance. (When glazed it is known as MG Sulphite paper- MG = machine glazed.) The glazed surface can be printed using flexographic methods (section 4.2.3) but for higher print quality the paper should be coated. It is also used in laminates of paper and plastics or foil (Sections 3.2.2. and 3.2.3).	Used as small bags or wrapper for biscuits or confectionery
Greaseproof paper	40 - 60	Made by beating fibres more thoroughly during the manufacture of sulphite pulp. The smaller fibres make a more dense surface which is more resistant to oils.	Fresh fish or meat, liner for shipping containers for

		However this resistance is lost when the paper becomes wet.	butter/cheese, liner for packs of biscuits, fats and other greasy foods
Glassine	20 - 40	A translucent sulphite paper that is given a high gloss surface by the heated rollers used in its manufacture. The gloss makes it more resistant to water when it is dry, but if the paper does become wet it loses this resistance.	Liner for biscuits, cooking fats, fast foods and baked goods
Tissue paper	25	A thin, weak sulphite paper. It is often machine glazed on one side (known as MG tissue). A special type of tissue paper with small regular perforations is used to make tea bags.	Wrapping fresh fruit to prevent bruising
Newspapers		Commonly available in most developing countries and are often used for food packaging. However newsprint should not be used in direct contact with foods (especially fatty foods) as the ink is carcinogenic (causes cancer). It is also an unattractive outer wrap and does not give a professional image to the processor. However it is cheap and widely available and is therefore a source of material for making into paper pulp for the production of molded trays.	Wrapping, low weight carrying envelop
Re-cycled paper	-	Recycled paper from Government forms and school exercise books is also widely used for packaging in many countries. There is a flourishing small industry in some countries which converts this type of paper into pre-formed bags which are used to contain foods and other items for short periods of time. Again care should be taken to avoid direct contact with foods, especially fatty foods as any ink on the paper is likely to contaminate the food.	Dry food and grocery items which are not oily or fatty.

Wet strength paper

Paper sacks used in wet conditions need to retain at least 30% of their dry strength when saturated with water. To achieve wet strength, urea formaldehyde and melamine formaldehyde are added to the stock. These chemicals cross-link during drying and are deposited on the surface of the cellulose fibres making them resistant to water absorption.

Generally used as an additional wet proof layer in paper packaging

Microcrping

Microcreping, e.g. as achieved by the Clupak process, builds an almost invisible crimp into paper during drying enabling paper to stretch up to 7% in the MD compared to a more normal 2%. When used in paper sacks this feature improves the ability of the paper to withstand dynamic stresses, such as occur when sacks are dropped.

Used as an strength enhancing layer in paper packaging of heavy duty sacks

*g/m² is conventionally called *gsm* which is a very important parameter to specify paper in printing and packaging industry.