

Pressure relief mattress

Body support product whose shape and or material characteristics redistribute pressure. Shapes may include full depth pads to replace the standard mattress, or one-piece mattress overlays, which are thinner pads, placed on top of a standard mattress. Materials may include foam, gel, coir, mesh, sheepskin, silicone coated wool, fluid, and static air cell or automated air pump mattresses, and construction may be layered or segmented.

- **Product Classification**

- APL (WHO Assistive Product Priority List): 30 (Pressure relief mattresses).
- ISO 9999:2022: 043306 (Assistive products for tissue integrity when lying down).

- **Possible configuration variants**

- Dynamic surface mattress: alternating air cells and power source (may be an overlay or full mattress replacement).
- Static surface single-piece mattress (such as silicone coated wool).
- Static surface hybrid mattress (comprising layers of material such as dense foam topped with memory foam or lower density foam).
- Static surface segmented mattress (such as foam with inserts of different density or insert of air cells).
- Mattress made of heat- and cold-resistant materials.

- **Possible accessories or optional components**

- Mattress covers (washable, two-way stretch, vapor permeable and water-resistant).

- **Product goals**

Activities or functions the product is mainly intended to support, according to WHO ICF Classification:

- Caring for body parts [\[d520\]](#). *Only if used with variants: Static surface single-piece mattress, Static surface hybrid mattress, Static surface segmented mattress*
- Maintaining body position [\[d415\]](#) (lie comfortably in bed).

- **Indicated impairments**

Difficulties the product is mainly intended to address, according to the WHO ICF Classification:

- Protective functions of the skin [\[b810\]](#).
- Repair functions of the skin [\[b820\]](#) (current pressure injuries). *Only if used with variants: Dynamic surface mattress: alternating air cells and power source*

- **Contraindicated impairments**

Difficulties for which the product may be inappropriate:

None specified.

- **Indicated environments**

Specific environments in which the product should be used:

- Beds (pressure relief mattresses are placed on beds, usually western-style single beds: on top of bed frame if a full depth mattress, on top of mattress if an overlay).

- **Contraindicated environments**

Environments in which the product may be inappropriate:

- Hot or cold environments (the pressure relieving properties of some materials such as foam and gel react and change in hot or cold environments, becoming more viscous or stretchy in hot weather, and less malleable in cold weather). *Unless used with variants: Mattress made of heat- and cold-resistant materials.*

- **Other indicated factors**

Other factors or situations the product is intended to address:

- Past history of pressure injuries (due to diabetes mellitus, other perfusion, oxygenation, nutritional and circulation deficits, impaired motor abilities causing movement restrictions such as spinal injury or cerebral palsy).
- Risk of pressure injuries (due to limited sensation, mobility, limited activity and a high potential for friction, shear and moist skin).
- Current pressure injuries. *Only if used with variants: Dynamic surface mattress: alternating air cells and power source*
- Other contraindicated factors

Other factors or situations in which the product may be inappropriate:
None specified.
- Points to be considered in product selection
 - Each user has a unique set of needs: these needs can be categorized as: a) physical – the user's health situation and postural and functional needs; b) environmental – where users live and sleep; and c) lifestyle – the things users need to do in the bed to lead their chosen way of life (including proximity to partners).
 - Each user requires an individual assessment, taking into account lifestyle, vocation, home environment and physical condition. Using the information gained from the assessment, a bed and pressure mattress prescription is developed together with the user, family member or caregiver.
 - Selection of a support surface that meets the individual's need for pressure redistribution is based on the following factors: level of immobility and inactivity, need to influence microclimate control and shear reduction, size and weight of the individual, number, severity and location of existing pressure injuries (most at-risk areas include buttocks, heels, and occiput), risk for developing new pressure injuries.
 - The mattress represents just one of the surfaces with which a user will interact within 24 hours. Transfers on / off the mattress should be considered as a source of risk (shear forces or different heights for sliding transfers, risk of puncturing air cushions with slide boards, risk to user if transferring onto a non-pressure-relieving surface such as a plastic shower seat or commode seat). Consideration should be given to achieving the same level of pressure relief on all surfaces.
 - Users of different sizes should be provided with suitable sized pressure relief mattresses e.g. pediatric, bariatric.
 - The prescription details the mattress type and the training the user needs to effectively use and maintain the mattress.
 - Individuals at risk of developing pressure injuries (stage 1 pressure injury: non-blanchable erythema of intact skin) require a static low level pressure relieving surface such as reactive single layer foam mattress or overlay or air mattress. If users are under 45 kg in weight, a silicone-coated wool overlay or configuration of medical grade sheepskin and foam can be trialed.
 - Individuals with mild pressure injuries or who have co-morbidities, or a past history of healed pressure injuries require a moderate level pressure relieving surface such as gel, air (static or dynamic) or high-quality hybrid mattresses or mattress overlays.
 - Individuals with current pressure injuries (stage 2 pressure injury: partial-thickness skin loss with exposed dermis, stage 3 pressure Injury: full-thickness skin loss, or stage 4 pressure Injury: full-thickness skin and tissue loss) require high level pressure relieving surfaces such as high-quality hybrid mattresses, air filled or active air cell mattresses.
 - Press relief mattresses are combined with beds with one or more sections of the mattress support platform that can be adjusted in height or angle, manually or by an electric mechanism.
 - It is important to ensure the adjustability of the base is compatible with the mattress, as some mattresses become ineffective if their shape is deformed through tilting.
- Points to be considered in product fitting
 - Trained personnel assemble any moving parts, inflate (if required) and fit the mattress onto the bed.
 - During fitting, the user and competent personnel together check that: the mattress is correctly adjusted for the user and meets the user's mobility and postural support needs to minimize the risk of the user developing secondary deformities or complications.
 - Adding a mattress to a bed, or on top of an existing mattress, may impact on the height of the bed relative to the floor and to other surfaces from which the user is transferring; it may be necessary to adjust the height of the bed legs to ensure the overall night of the bed and mattress combination allows for functional transfers and for caregivers to provide support without manual handling strain.

- Points to be considered in product use
 - Reposition all individuals with or at risk of pressure injuries on an individualized schedule. Collaborate with the user to decide repositioning frequency with consideration to the individual's level of activity, mobility and ability to independently reposition.
 - Reposition the individual in such a way that optimal offloading of all bony prominences and maximum redistribution of pressure is achieved. using manual handling techniques and equipment that reduce friction and shear.
 - Users and caregivers can monitor their own pressure care through regular skin checks and should be encouraged to do so.
- Points to be considered in product maintenance / follow-up
 - The user and caregivers are instructed on how to safely and effectively use and maintain the mattress and who to contact in case of problems.
 - Follow-up appointments are an opportunity to check the mattress and whether it provides adequate pressure relief for the user.
- Examples of products available on the market
 - Live product search in the EASTIN website <https://www.eastin.eu/en/searches/products/list?iso=043306>

Source

This Fact Sheet was compiled in 2021 by an international team of experts, to provide the initial knowledge base for a project ("An online system to assist the selection of assistive product") supported by the World Health Organization in 2020-2021 within the GATE Initiative (Global collaboration on Assistive Product). Fact Sheets were compiled for each of the 50 types of products included in the WHO APL (Assistive Product Priority List).

The team was composed of Renzo Andrich (Italy, group leader), Natasha Layton (Australia), Stefan von Prondzinski (Italy), Jerry Weisman (USA), Silvana Contepomi (Argentina) and Hasan Minto (Pakistan).

The project led to a prototype online tool called ASPREX (ASsistive PProduct EXplorer). At the end of the project, it was transferred to a WHO collaborating center (the Global Disability Hub in the UK), in view of possible future developments.