|  |  |  |
| --- | --- | --- |
| **Poloxamers**  | **Sol – gel transition temperature (°C)** | **Viscosity (Pa.s)** |
| **25°C** | **37°C** |
| **PF 127**  w/w  |  |  |  |
| 15 | >40 | 5.66 | 398.6 |
| 20 | 31.90 | 610.2 | 3190 |
|  25  | 27.50 | 2.78 | 289.6 |
|  30  | 24.95 | 477.4 | 1121.56 |
| **P 87**  w/w  |  |  |  |
| 15 | >40 | 0.03 | 0.07 |
| 20 | >40 | 0.04 | 2.56 |
| 25 | 33.87 | 0.54 | 67.59 |
| 30 | 29.50 | 0.51 | 968.45 |

**Table S1: Poloxamers concentration, gelation temperatures and viscosity at 25oC and 37oC (n=3)**

**Table S2 Average depths of penetration (DOP) in neonatal porcine skin tissues and moisture contents (%) of fabricated MNs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sample codes** | **Samples composition** | **Weight ratio** **(% w/w)** | **Square Grid** | **Heights****(µm)** | **Average** **Depth of penetration** **(µm) n=3** | **Moisture****Contents (%)****N=3** |
| PG10000 | Gantrez® S-97/PEG10000 | 10: 7.5 % | 19x19 | 600  | 578± 33.56 | 8 ± 0.265 |
| Gelatin | Gelatin B | 15% | 19x19 | 600  | 549±27.40 | 5.23 ± 0.218 |



**Figure S1.** FTIR spectroscopic analysis of uncrosslinked Gantrez® S-97, Pure gelatin, Pure PEG10000, cross-linked PG10000 MN arrays and gelatin MNs.