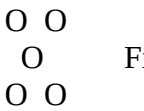
Math for 5 Dot Aperture Pattern

Overview:

Given a paste coverage ratio we want to calculate the diameter of 5 round apertures.



Final Round Pattern

Initial Pad Are = K

Reduction = R (0.5 = 50%)

Diameter of Round = D

Final Area = K * R = F

Area of a Round Flash = 3.14 * (D / 2.0)**2

So

F = 5 * 3.14 * (D / 2.0) **2

F = 15.7 * .25 * D**2

F = 4 * D**2

D = Sqrt (F) / 2 (Pretty Close)

Example

Lets say you have a 1 inch by 1 inch pad and you want 75% paste coverage. So F (Final Area) = .75 insq

So D = .43 inch Diameter flash

Lets Check:

Each hole is (.43 / 2)**2 * 3.14 = 0.145 insq so 5 holes is .725 insq (Pretty Close)