Effective plastic strain rate:

$$\dot{\bar{\varepsilon}}^{p} = \sqrt{\frac{2}{3}\dot{\varepsilon}_{ij}^{p}\dot{\varepsilon}_{ij}^{p}} = \sqrt{\frac{2}{3}}\left\{\left(\dot{\varepsilon}_{xx}^{p}\right)^{2} + \left(\dot{\varepsilon}_{yy}^{p}\right)^{2} + \left(\dot{\varepsilon}_{zz}^{p}\right)^{2} + 2\left[\left(\dot{\varepsilon}_{xy}^{p}\right)^{2} + \left(\dot{\varepsilon}_{xz}^{p}\right)^{2} + \left(\dot{\varepsilon}_{yz}^{p}\right)^{2}\right]\right\}^{1/2}$$

Effective plastic strain:

$$\bar{\varepsilon}^{p} = \int \dot{\bar{\varepsilon}}^{p} dt$$

For example uniaxial tension in the x-direction the strain rates are

$$\dot{\varepsilon}_{xx}^{p} = \dot{\varepsilon}$$
$$\dot{\varepsilon}_{yy}^{p} = -0.5\dot{\varepsilon}$$
$$\dot{\varepsilon}_{zz}^{p} = -0.5\dot{\varepsilon}$$
$$\dot{\varepsilon}_{xy}^{p} = 0$$
$$\dot{\varepsilon}_{xz}^{p} = 0$$
$$\dot{\varepsilon}_{yz}^{p} = 0$$

Where the -0.5 factors are from conservation of volume ("Plastic Poisson's Ratio" = 0.5). The effective plastic strain rate is

$$\dot{\bar{\varepsilon}}^{p} = \sqrt{\frac{2}{3}}\left\{(\dot{\varepsilon})^{2} + (-0.5\dot{\varepsilon})^{2} + (-0.5\dot{\varepsilon})^{2}\right\}^{1/2} = \sqrt{\frac{2}{3}\frac{3}{2}(\dot{\varepsilon})^{2}} = \dot{\varepsilon}$$

So that for uniaxial loading the effective plastic strain rate is equal to the strain rate in the loading direction (this is the point of the $\sqrt{2/3}$ factor). This is similar conceptually to effective stress.