expected to shut down the formation of the acid salt byproducts from the conversion of other compounds such as sorbitol, xylitol, and arabitol to higher value polyols. This application would also be expanded to include other catalysts that are found to be both active and stable under neutral and acidic conditions during the course of this reaction.

As an example and with reference to Table 7 below. Under the low to no-base conditions hydrogenolysis can be efficiently realized in that organic acid salt byproducts can be substantially eliminated below analytical detection after the system utilizes neutral feedstock having previously run on feed containing sodium hydroxide as a base. Conversion 31% with little to no detectable selectivity to lactate, compared to the 1% to 4% carbon molar selectivity to lactate reported in the samples of reaction product generated from feed that has substantial amounts of base.

Hydrogenolysis product streams can have little to undetected levels of organic acid or organic acid salt byproducts due to adjustments of the pH from lower than normally reported all the way down to neutral and acidic.

In compliance with the statute, this disclosure has been provided in language more or less specific as to structural and methodical features. It is to be understood, however, that the disclosure is not limited to the specific features shown and described, since the means herein disclosed comprise preferred forms of putting the invention into effect. The invention is, therefore, claimed in any of its forms or modifications within the proper scope of the appended claims appropriately interpreted in accordance with the doctrine of equivalents.

The invention claimed is:

1. A hydrogenolysis process comprising:

providing a reactant mixture to a reactor to form a product mixture, the reactant mixture comprising a glycerol and a base, and the product mixture comprising propylene glycol, organic acids, and/or salts of organic acids, wherein the carbon molar selectivity to the organic acids and/or salts of organic acids is less than 2% and the carbon molar selectivity to the propylene glycol is at least 30%.

TABLE 7

	Low acid										
	F76-1	F76-2	F76-3	F76-4	F76-G5	F76-6	F76-7	F76-8	F76-9	F76-10	F76-11
System Conditions											
F76 5% Ru + 1% Cd, 58959-85-1					Not Glorified Grab See HPLC Folder						
Hours on stream	43:58:00	68:49:00	92:57:00	123:05:00		216:28:00	260:34:00	284:12:00	308:11:00	380:35:00	404:38:00
Cat. Bed Temp (° C.)	190	190	190	190	190	190	190	190	190	185	210
System Pressure	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Liq. Feed Rate (ml/hr)	50	50	50	25	50	25	50	35	50	50	25
Glycerol Feed Concentration (wt %)	35.71	35.71	43.58	43.58	44.95	44.95	35.52	35.52	35.71	35.69	44.95
Glycerol Source	ADM	ADM	ADM	ADM	ADM	ADM	ADM	ADM	ADM	ADM	ADM
NaOH Feed Concentration (wt %)	2.10	2.10	0.50	0.50	0.00	0.00	1.00	1.00	2.10	2.10	0.00
H2/Glycerol Molar Feed Ratio	5	5	5	5	5	5	5	5	5	5	5
H2 Flow Rate (SCCM)	450	450	450	252	252	252	454	252	454	454	454
% Wt. Recovery	97.44	97.94	97.05	98.98		92.12	96.81	96.49	98.62	98.38	97.76
% Carbon Recovery	96.46	94.70	99.02	99.58		98.67	95.64	96.18	96.51	96.10	100.55
Glycerol Conversion (By Difference)	0.97	0.98	0.61	0.73		0.13	0.86	0.91	0.94	0.96	0.31
LHSV (cc feed/cc cat/h)	1.67	1.67	1.67	0.83		0.83	1.67	1.17	1.67	1.67	0.83
WHSV (g/gly/g cat/h)	1.35	1.35	1.65	0.83		0.85	1.35	0.94	1.35	1.35	0.85
Space Time Yield (g PG/cc cat/h)	0.47	0.47	0.39	0.23		0.04	0.42	0.31	0.46	0.47	0.11
Selectivities											
PG C Molar Selectivity	0.907	0.920	0.964	0.963		0.990	0.947	0.941	0.915	0.928	0.991
Lactate C Molar Selectivity	0.029	0.031	0.007	0.008		0.000	0.020	0.021	0.040	0.036	0.000
EG C Molar Selectivity	0.021	0.020	0.016	0.015		0.010	0.017	0.016	0.016	0.015	0.009
Formate C Molar Selectivity	0.012	0.011	0.006	0.005		0.000	0.006	0.006	0.008	0.007	0.000
Glycerate C Molar Selectivity	0.004	0.003	0.003	0.004		0.000	0.006	0.006	0.006	0.007	0.000
Methanol C molar Selectivity	0.006	0.000	0.000	0.000		0.000	0.000	0.004	0.000	0.000	0.000
Ethanol C Molar Selectivity	0.013	0.012	0.003	0.004		0.000	0.004	0.005	0.008	0.004	0.000
Propanol (1&2) C Molar Selectivity	0.003	0.002	0.001	0.001		0.000	0.001	0.001	0.003	0.001	0.000